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Ministry of the ENVIRONMENT

Outfall Survey

Mimico Creek
Municipality of Metropolitan Toronto

1973

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REPORT ON
AN OUTFALL SURVEY
OF
MIMICO CREEK
WITHIN
THE MUNICIPALITY OF METROPOLITAN TORONTO

DISTRICT ENGINEERS SECTION
SANITARY ENGINEERING BRANCH

FEBRUARY , 1973.

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1.0 SUMMARY

This report presents information and data of Mimico Creek and an Outfall Survey conducted of that stream in the summer of 1972 by staff of the Ministry of the Environment. The objective of the survey was to locate all points of potential discharge and to sample and estimate the quality of the observed discharges to Mimico Creek within Metropolitan Toronto.

During the survey 107 outfalls were located and it was possible to obtain a sample for analyses at 66 of these. The information and analyses results are presented mostly in the form of tables, and a map of Mimico Creek indicating the outfalls is enclosed. Specifically, appendices I and II present a description of the outfalls and stream sampling locations and Tables I and II present the analyses results of the samples collected. The other tables and appendices contain related data.

Mimico Creek flows through the Borough of Etobicoke and thus receives heavy urban runoff. The Malton Water Pollution Control Plant, located north of the Metropolitan Toronto boundary, is the only treatment plant discharging to this stream.

To evaluate the discharges to Mimico Creek the analyses results were compared to the Etobicoke By-law 402 which regulates all discharges within the Borough. Twenty-six of the sixty-six outfalls sampled had discharges which can be considered acceptable. The remaining outfalls

exceeded one or more of the following criteria; BOD, Suspended Solids, Phenols and Total Coliforms. However, it must be noted that a single sampling is not necessarily sufficient to permit a valid evaluation. A number of outfalls were of such adverse quality, that it was recommended to the Borough of Etobicoke, Engineering Department that immediate remedial action should be taken.

2.0 RECOMMENDATIONS

The following recommendations are presented to the Borough of Etobicoke.

1. That the outfalls listed in Section 5.4 of this report should be investigated so that the cause of the contaminated effluents can be determined and removed.
2. That a program to monitor the effluent quality of outfalls within the municipality, particularly those that failed to satisfy the criteria established by Borough of Etobicoke By-law 402, should be maintained and appropriate corrective measures taken.

3.0 INTRODUCTION

In February, 1971, the first of a series of reports discussing the investigation of discharges to the major watercourses in Metropolitan Toronto was published. Preceded by reports of the Don River, Highland Creek and the Humber River this report of an outfall survey of Mimico Creek is the fourth in the series.

The basic purpose of the survey was to locate and sample, if possible, all outfalls discharging to Mimico Creek and subsequently to report on the quality of these effluents, the general quality of the watercourse, and to present plans indicating the location of these outfalls.

Mimico Creek was surveyed from Indian Line in the north to Lake Ontario in the south. Outfalls were located and where the flow was sufficient, a sample was obtained for chemical and bacteriological analyses. Appendix I is a listing of all outfalls located.

The designation used for the outfalls is a numerical listing as the outfalls were observed from north to south, beginning with MC-1. However, in Appendix I the numerical listing is related to the Ontario Coordinate Grid System. This system was established recently as an integrated reference system throughout Ontario. The use of the grid system will facilitate the locating of the outfalls in the

future by the municipality.

For many outfalls an estimate of the flow at the time of sampling is presented. These estimates are only for the purpose of indicating the relative magnitude of discharge to Mimico Creek. Unfortunately, an estimate is not available for each outfall.

It must be noted that this survey consisted basically of only one sampling run on Mimico Creek. To draw conclusions as to the acceptability of a discharge at all times and in all weather conditions based on one set of sample analyses results is invalid. In most instances, therefore, the analyses results presented in this report should not be used as a basis for action until they have been substantiated by additional results. Since many sample results are not necessarily representative, poorer conditions could also be found. The notes in the "remarks" column of Appendix I may suggest the need for further sampling or investigation despite the analyses results.

A municipality is responsible for all discharges from its sewerage systems to any watercourse. The purpose of presenting this report on the basis of only one sample run is to supply preliminary results so that the municipality can now proceed with the appropriate measures to bring the quality of the discharges to within the desired limits.

Within the boundaries of Metropolitan Toronto, Mimico Creek is situated only within the Borough of Etobicoke. Some outfalls having discharges of adverse quality have already been brought to the attention of the Borough of Etobicoke, Engineering Department.

The sampling was conducted under varying weather conditions. The quantity and quality of a discharge from an outfall is often dictated by the local weather conditions. Most of the sampling was completed during the week of June 26, 1972 and Meteorological data from the Federal Department of Transport for the days of sampling is included in Appendix III.

Basically, the remainder of the report is a presentation of sample analyses results. However, Section 4.0 discusses the Mimico Creek watershed, the Malton Water Pollution Control Plant, the Etobicoke Treatment Plant, combined sewers and the aesthetics and quality of Mimico Creek.

4.0 GENERAL

4.1 Watershed Data

The Mimico Creek watershed is an area of approximately 28 square miles, and 2/3 is within the Metropolitan Toronto boundaries. Within the Borough of Etobicoke, which is the only Borough of Metro that Mimico Creek flows through there are no tributaries of significant size.

Mimico Creek passes through a highly developed urban area. North of Highway 401 it is an industrial area with some portions undeveloped. The stream, for most of its length, then passes through the densely populated residential districts of Etobicoke and the commercial and industrial areas near the lake front. Also, Mimico Creek winds its way through the interchanges of Highways 401 and 27 and Eglinton Avenue; therefore, it is the receiving stream for most of the runoff from these roadways. A drainage area of this character is an obvious detriment to the quality and appearance of a stream.

4.2 Water Pollution Control Plants

Presently there is only one treatment plant discharging to Mimico Creek. Located south of Derry Road, the Malton Water Pollution Control Plant treated an average flow of 660,000 gallons per day in 1972. Reasonable secondary treatment is normally maintained. A summary of the operational

data for 1971 and 1972 are presented in Appendix IV. In the near future it is planned to connect the Malton facilities to the Metropolitan Toronto system which discharges to Lake Ontario.

The old Etobicoke Treatment Plant, situated west of Mimico Creek and north of Lakeshore Road no longer discharges to Mimico Creek. It is presently used as a vacuum filtration plant for the treatment of digested sludges from the Humber Water Pollution Control Plant. The byproducts of the operation are either disposed at a sanitary landfill site or returned to the Humber Plant. Previously, emergency conditions necessitated storing of the dry sludge outside the fenced area. Recently, clean-up and grading was performed to prevent any leachate reaching Mimico Creek and further work will be done as required.

4.3 Combined Sewers

A very small portion (approximately 200 homes of 48,000) of Etobicoke is on combined sewers (i.e. roof leaders and footing drains connected to the sanitary sewers). Any problems are in the Lakeshore area where sanitary sewage discharged with storm flow would go to the lake. The Borough has had corrections made to some 500 of the original 700 homes known to be creating these problems.

4.4 Aesthetics

The most widely used method of 'measuring' the quality of a body of

water is to observe its appearance. From the beginning to the end of the survey, Mimico Creek was found to be very turbid giving it a murky appearance. However, the run-off caused by the rains which occurred during the sampling period would have had a significant effect considering the type of land drained.

It must also be noted that the banks of Mimico Creek were being stabilized under a flood control project of the Metropolitan Toronto and Region Conservation Authority in the Malton area. This and other construction along the stream would contribute to the appearance.

Also, along the banks, debris was found that had been discarded by industry and a number of individuals.

4.5 Water Quality

Regular sampling has been conducted under the OWRC and now the Ministry of the Environment, Water Quality Monitoring Program. A summary of the results of samples collected near the mouth of Mimico Creek over the past seven years is presented in Table III. No particular trend is suggested by the data.

4.6 Photographs

A number of photographs are included in this section to present several aspects of Mimico Creek. Most of the photographs were taken within Metropolitan Toronto.



This depicts the bank stabilization work west of Malton by the Metro Toronto and Region Conservation Authority.



The smaller outfall with the heavy flow is the discharge from the Malton WPCP, south of Derry Road. Note the foaming in the foreground.



Mimico Creek as seen at the beginning of the survey at Indian Line, looking southwest.



Mimico Creek near Disco Road downstream from Indian Line. The industry observed, Fermar Limited, has a holding pond part way up the bank.



This outfall, MC-75, is located at the end of Springbrook Gardens. It is quite representative of most outfalls found in urban subdivisions.

BOD	1.0 mg/l
SS	0
Total Coliform	3900
Faecal Coliform	1880



Outfall MC-107 located at the mouth of Mimico Creek south of Lakeshore Road. Note the white scum being discharged which was identified as tallow. It is suspected that industrial wastes are contaminating the effluent of this outfall.

BOD	10 mg/l
SS	15 mg/l
Total Coliform	20,000 to 350,000
Faecal Coliform	3,000 to 70,000

5.0 ANALYTICAL RESULTS

5.1 General

Samples for chemical and bacteriological analyses were collected at each outfall which was found to be accessible and to have an adequate discharge. Routine chemical analyses requested were: 5-Day BOD, Suspended Solids, Total Kjeldahl, Total Phosphorus and Phenols. On occasion other analyses and identifications were performed. Total and faecal coliform determinations were performed on all bacteriological samples. Samples were delivered to the Ministry of Environment Laboratory on Resources Road within approximately 5 hours of sampling.

The analyses results were compared to the standards set by the Borough of Etobicoke By-law No. 402 which regulates all discharges to sanitary sewers, storm sewers and natural outlets within the Borough. The criteria established for discharges to storm sewers pertinent to this discussion are:

Borough of Etobicoke By-law 402

BOD	20 mg/l
Suspended Solids	30 mg/l
Phenols	0.04 mg/l
Total Coliform Bacteria	2400/100 ml

Those samples conforming to all four criteria have been considered acceptable while all others have been denoted as unacceptable.

5.2 Mimico Creek - Outfall Survey

During the survey of Mimico Creek a total of 107 outfalls were located. A description and the location are indicated in Appendix I and a map is enclosed at the back of the report. Of those located, 66 outfalls were found to be flowing sufficiently to permit sampling and the results are presented in Table I.

Twenty-six of the outfalls had discharges of a quality that may be considered acceptable. The remaining 40 outfalls exceeded the criteria as listed below:

Number exceeding BOD criteria - 3

Number exceeding Suspended Solids criteria - 16

Number exceeding Phenols criteria - 2

Number exceeding Total Coliform criteria - 36

The outfalls included in this listing are: MC-2, MC-3, MC-5, MC-6, MC-7, MC-8, MC-9, MC-16, MC-18, MC-19, MC-22, MC-24, MC-25, MC-30, MC-35, MC-36, MC-38, MC-42, MC-49, MC-54, MC-55, MC-56, MC-58, MC-60, MC-61, MC-69, MC-70, MC-74, MC-75, MC-78, MC-81, MC-82, MC-89, MC-92, MC-94, MC-98, MC-99, MC-101, MC-105, MC-107.

5.3 Mimico Creek - Stream Survey

Samples from Mimico Creek itself were collected at 12 locations to permit an evaluation of the overall water quality and to detect any trend in the water quality throughout the length of the stream. Points of sampling are indicated in Appendix II and the results of the chemical and bacteriological analyses performed are presented in Table II.

Perusal of the analyses results reveal no particular trend. However, a general deterioration of the water quality of Mimico Creek was suggested throughout the length sampled. The impairment was mainly due to high coliform counts and high suspended solids concentrations. The rains that preceded some of the sampling could have affected the solids concentration; particularly, since Mimico Creek passes through a highly urbanized area. Again the validity of a single sampling must be noted.

However, a review of stream monitoring data compiled by the OWRC over the past seven years appears to substantiate the single sample run done during this survey. Samples are presently collected monthly at Lakeshore Road in Etobicoke. Annual summaries of the data collected are presented in Table III.

The monitoring reveals impairment, primarily due to bacteriological contamination, high suspended solids concentrations and occasional

low dissolved oxygen levels. No continued impairment or definite trends have been noted over the years except for higher chloride levels during winter months, likely due to road salting.

5.4 Discussion of Results

The Borough of Etobicoke, Engineering Department was informed of the results of the sampling at the time of the survey. Also, a number of outfalls demanding immediate attention were suggested to Etobicoke. Since these are based on only one series of samples the results are not necessarily representative. A listing of the outfalls of such adverse quality that a comprehensive investigation is recommended on this basis is given below:

Borough of Etobicoke - MC-3, MC-6, MC-16, MC-19, MC-70, MC-82, MC-92,
MC-98, MC-99, MC-101, MC-105, MC-107.

The sewer system that connects to the outfall under consideration should be investigated to discover and remove the cause of the contamination. It is expected that the descriptions and plans included within the report will be sufficient to permit locating of all outfalls.

Due to the appearance of the outfall and the extreme nature of the discharge it appears that the contaminated effluent at some outfalls is a direct result of industrial waste discharges. Outfalls of

specific concern are:

MC-19 (High BOD),

MC-101 (High Phenols),

MC-107 (Presence of Tallow).

If industrial wastes should be found to be the cause, the Borough of Etobicoke Sewer Use By-law 402 should be enforced to prevent further contamination entering the watercourse.

A monitoring program should be established to supplement the initial results obtained at outfalls which failed to meet the objectives specified by the Borough of Etobicoke By-law 402. Outfalls found consistently to be of unsatisfactory quality should be investigated as recommended for the outfalls listed above.

Prepared by:

B. R. Ward

B. R. Ward, Engineer,

District Engineers Section,

Sanitary Engineering Branch.

TABLE I

ANALYTICAL RESULTS - OUTFALL SAMPLING

SAMPLE POINT	DATE SAMPLED (1972)	5-DAY BOD mg/l	SUSPENDED SOLIDS mg/l	PHENOLS mg/l	TOTAL KJELDAHL AS N mg/l	TOTAL PHOSPHOROUS AS P mg/l	COLIFORMS PER 100 ml.		OTHER ANALYSES
							FAECAL	TOTAL	
MC-2	June 26	3.0	730	.004	0.80	0.40	L10	500	
MC-3	June 26	34.0	70	.050	18.0	0.20	160	11,000	
MC-5	June 26	11.0	240	.008	0.50	2.2	430	30,000	
MC-6	June 26	42.0	120	.020	2.0	0.40	300	10,100	
MC-7	June 26	3.0	140	.003	1.1	0.24	270	4,000	
MC-8	June 26	3.5	20	.012	1.0	0.18	10	159,000	
MC-9	June 26	20.0	70	.006	0.50	0.30	300	40,000	
MC-10	June 26	3.0	5	.020	0.64	0.50	270	740	Iron as Fe 1.9 mg/l
MC-11	June 26	3.0	5	.004	0.32	0.017	L10	20	
MC-12	June 26	2.0	15	.004	-	-	10	1,460	
MC-15	June 27	2.0	0	.002	0.60	0.28	L10	10	
MC-16	June 27	4.5	5	.003	1.0	0.10	9,000	68,000	
MC-18	June 27	3.5	180	.003	0.65	0.30	800	130,000	

Note: L = less than

TABLE I CONTINUED

SAMPLE POINT	DATE SAMPLED (1972)	5-DAY BOD mg/l	SUSPENDED SOLIDS mg/l	PHENOLS mg/l	TOTAL KJELDAHL AS N mg/l	TOTAL PHOSPHOROUS AS P mg/l	COLIFORMS PER 100 ml.		OTHER ANALYSES
							FAECAL	TOTAL	
MC-19	June 27	160	20	.004	3.9	0.65	1,500	1,720,000	
MC-22	June 27	-	-	-	-	-	600	9,100	
MC-23	June 27	1.6	5	.006	1.9	1.2	30	960	
MC-24	June 27	7.0	50	.015	1.7	0.39	30	9,400	
MC-25	June 27	4.0	10	.004	0.80	0.18	800	50,000	
MC-30	June 27	1.8	15	.003	0.75	0.050	80	5,000	
MC-33	June 27	-	-	-	-	-	10	900	
	June 30	3.0	30	.012	-	0.18	-	-	
MC-35	June 27	1.6	5	.002	0.45	0.054	80	4,900	
MC-36	June 27	-	-	-	-	-	30	3,000	
MC-37	June 27	-	-	-	-	-	70	2,000	
MC-38	June 27	3.5	10	.004	1.0	.085	4,000	165,000	
MC-39	June 27	4.5	10	.003	0.49	.064	10	1,470	
MC-40	June 27	0.6	0	.006	0.23	.019	L10	10	
MC-42	June 30	3.0	40	.004	-	0.25	-	-	

Note: L = less than

TABLE 1 CONTINUED

SAMPLE POINT	DATE SAMPLED (1972)	5-DAY BOD mg/l	SUSPENDED SOLIDS mg/l	PHENOLS mg/l	TOTAL KJELDAHL AS N mg/l	TOTAL PHOSPHOROUS AS P mg/l	COLIFORMS PER 100 ml.		OTHER ANALYSES
							FAECAL	TOTAL	
MC-44	June 28	1.2	5	.002	0.64	.068	L10	320	
MC-45	June 28	0.8	0	.002	0.35	.058	L10	270	
MC-49	June 28	2.0	5	.002	0.54	0.19	2,000	21,000	
	June 30	8.0	180	.004	-	0.48	-	-	
MC-52	June 28	0.6	5	.002	0.22	.005	20	460	
MC-53	June 28	0.6	5	.002	0.29	.040	30	1,590	
MC-54	June 28	1.8	10	.004	0.40	0.16	300	44,000	
	July 14	3.0	10	.004	-	-	1,800	117,000	
MC-55	June 28	2.0	-	.004	-	-	470	1,150	
	July 14	5.5	360	.004	-	0.51	3,000	440,000	
MC-56	June 27	1.0	5	.008	-	0.13	520	16,000	
MC-58	June 27	1.8	5	.004	-	0.26	520	8,000	
MC-60	June 27	1.2	5	.006	-	0.13	50	16,000	
MC-61	June 27	6.0	310	.012	-	0.85	1,100	7,900	
	June 30	8.5	370	.025	-	0.46	-	-	
MC-62	June 27	0.8	0	.010	-	.028	50	540	
MC-66	June 27	1.6	5	.004	-	0.10	10	130	

Note: L = less than

TABLE 1 CONTINUED

SAMPLE POINT	DATE SAMPLED (1972)	5-DAY BOD mg/l	SUSPENDED SOLIDS mg/l	PHENOLS mg/l	TOTAL KJELDAHL AS N (mg/l)	TOTAL PHOSPHOROUS AS P (mg/l)	COLIFORMS PER 100 ml.		OTHER ANALYSES
							FAECAL	TOTAL	
MC-69	June 27	5.5	60	.025	-	0.11	200	11,000	
MC-70	June 27	4.0	10	.016	-	0.074	5,000	530,000	
MC-71	June 27	0.6	5	.007	-	0.31	L10	1,490	
MC-72	June 27	0.6	5	.010	-	0.080	20	470	
MC-74	June 27	1.6	10	.007	-	0.28	160	25,000	
MC-75	June 27	1.0	0	.008	-	0.053	1,880	3,900	
MC-77	June 27	1.0	0	.004	-	0.028	L10	330	
MC-78	June 27	1.2	10	.010	-	0.22	60	23,000	
MC-79	June 26	2.0	0	0	0.29	0.033	30	1,160	
MC-80	June 26	1.8	0	.004	0.16	0.017	L10	510	
MC-81	June 26	3.0	130	.006	2.1	0.45	10	660	
MC-82	June 26	7.0	10	.008	0.98	0.20	9,000	166,000	
MC-84	June 30	1.6	10	.020	-	0.11	-	-	
MC-85	June 26	6.5	15	.006	0.87	1.5	L10	10	
MC-86	June 26	4.5	10	.004	1.1	0.22	60	990	
MC-88	June 26	1.8	5	.002	0.25	0.028	10	140	
Mc-89	June 26	5.0	5	.007	1.7	0.45	100	3,700	Iron as Fe 4.2 mg/l

Note: L = less than

TABLE 1 CONTINUED

SAMPLE POINT	DATE SAMPLED (1972)	5-DAY BOD mg/l	SUSPENDED SOLIDS mg/l	PHENOLS mg/l	TOTAL KJELDAHL AS N mg/l	TOTAL PHOSPHOROUS AS P mg/l	COLIFORMS PER 100 ml.		OTHER ANALYSES
							FAECAL	TOTAL	
MC-92	June 30	2.5	5	.004	0.75	0.14	18,000	28,000	
MC-94	June 30	2.0	30	.006	-	0.33	1,060	31,000	
MC-98	June 26	4.0	5	.015	0.57	0.044	13,000	86,000	
MC-99	June 26	4.0	5	.006	0.54	0.95	150,000	270,000	
MC-101	June 26	10.0	10	.160	0.59	0.24	10	160	
MC-103	June 26	2.0	5	0	0.29	0.031	L10	10	
MC-104	June 26	3.0	10	.008	1.3	0.15	10	680	
MC-105	June 26	16.0	740	.006	4.8	1.5	600	58,000	
MC-107	June 26	10.0	15	.012	0.87	1.5	3,000	20,000	
	Aug. 18	-	-	-	-	-	20,000	350,000	
	Aug. 18	-	-	-	-	-	70,000	290,000	

White scum was
examined by I.R.
Spectrometry and
by hydrolysis.
The scum was
confirmed to be
tallow.

Note: L = less than.

TABLE II

ANALYTICAL RESULTS - STREAM SAMPLING

SAMPLE POINT	DATE SAMPLED (1972)	5-DAY BOD mg/l	SUSPENDED SOLIDS mg/l	PHENOLS mg/l	TOTAL KJELDAHL AS N mg/l	TOTAL PHOSPHOROUS AS P mg/l	COLI FORMS PER 100 ml	
							FAECAL	TOTAL
MC-A	June 26	4.5	30	.006	2.2	0.64	1,530	30,000
	June 30	4.5	1,020	.006	-	1.6	-	-
	Aug. 18	11.0	20	.006	7.1	1.6	2,800	7,900
MC-B	June 26	4.0	50	0	2.6	0.57	1,650	26,000
MC-C	June 26	6.0	50	.004	1.0	0.50	3,700	10,000
	June 27	6.5	300	.005	2.4	0.67	7,000	12,200
MC-D	June 27	7.0	70	.004	2.0	0.43	13,500	420,000
MC-E	June 27	7.0	200	.004	1.8	0.55	7,800	12,400
	June 30	4.5	490	.006	-	0.84	2,100	160,000
MC-F	June 27	4.5	40	.005	1.3	0.58	4,500	11,400
MC-G	June 30	7.0	670	0	-	0.85	1,000	140,000
MC-H	June 28	3.5	30	.006	1.8	0.43	340	14,000
	June 30	4.5	450	.008	-	0.89	1,800	90,000
MC-I	June 27	4.5	60	.006	-	0.42	1,300	8,000
	June 30	5.0	530	.006	-	0.91	5,500	140,000
MC-J	June 27	4.0	50	.012	-	0.52	700	13,000

TABLE II CONTINUED

<u>SAMPLE POINT</u>	<u>DATE SAMPLED (1972)</u>	<u>5-DAY BOD mg/l</u>	<u>SUSPENDED SOLIDS mg/l</u>	<u>PHENOLS mg/l</u>	<u>TOTAL KJELDAHL AS N mg/l</u>	<u>TOTAL PHOSPHOROUS AS P mg/l</u>	<u>COLIFORMS PER 100 ml</u>	
							<u>FAECAL</u>	<u>TOTAL</u>
MC-K	June 26	3.0	15	.005	0.73	0.20	20	4,000
	June 30	6.0	810	.006	-	0.73	520	150,000
MC-L	June 26	4.0	50	.004	0.96	0.32	4,000	50,000
	June 30	7.0	570	.008	-	1.2	1,300	169,000

TABLE III

WATER QUALITY DATA - MIMICO CREEK AT LAKESHORE BOULEVARD

YEAR (NO. OF SAMPLES)	5 DAY BOD (mg/l)			SUSPENDED SOLIDS (mg/l)			COLIFORM BACTERIA(per 100 ml)			TOTAL KJELDAHL AS N (mg/l)	TOTAL PHOSPHOROUS AS P (mg/l)
	Max.	Min.	Avg.	Max.	Min.	Avg.	Max.	Min.	Geometric Mean		
1971 (12)	9.5	2.5	5.5	220	10	59	130,000	850	6,683	1.32	0.47
1970 (19)	9.5	1.8	4.9	190	5	34	14,100	8	1,625	1.80	0.83
1969 (8)	16.0	2.0	7.4	330	10	107	200,000	7,000	40,660	1.90	0.60
1968 (24)	14.0	1.6	5.1	300*	6*	37*	85,000	280	13,970	1.71	1.86
1967 (25)	9.6	0.9	4.1	230*	8*	32*	168,000	4	14,000	1.58	1.00
1966 (10)	5.6	1.8	4.1	294	7	62	170,000	76	3,855	1.59	-
1965 (6)	11.8	2.6	7.3	34	8	19	180,000	410	6,359	3.35	-

* Turbidity Analyses in Jackson Turbidity Units.

APPENDIX I

POINTS OF DISCHARGE TO MIMICO CREEK

<u>OUTFALL DESIGNATION</u>	<u>ONTARIO GRID SYSTEM DESIGNATION</u>	<u>DESCRIPTION OF OUTFALL</u>	<u>ESTIMATED FLOW(GPM)</u>	<u>SAMPLE OBTAINED</u>	<u>REMARKS</u>
MC-1	8DYXDMM44	18" CMP, right side of creek, road drain into ditch.	no flow	no	Debris in ditch.
MC-2	8DYXJMM57	24" black plastic outfall, left side of creek.	40	yes	Flow quite murky.
MC-3	8DYXKMM53	15" concrete outfall, left side of creek.	15	yes	Evidence of recent discharge of heavy oil or tar.
MC-4	8DYXKMM62	two 2" plastic pipes, right side of creek.	no flow	no	1 connected to a pipe and purpose of other unknown, appear to lead to Fermar Co. Ltd.
MC-5	8DYYLMM42	48" concrete outfall into large open ditch, right side of creek.	15	yes	
MC-6	8DYYMMM57	54" concrete outfall, left side of creek at Carlingview Drive.	5 - 10	yes	Effluent a murky green colour and evidence of oil.
MC-7	8DYYJMM45	54" outfall from Disco Road to ditch sampling of drainage to Mimico Creek.	20	yes	
MC-8	8DYYOMM63	60" concrete outfall from Belfield Road.	25-30	yes	
MC-9	8DYYPMM47	42" CMP outfall to ditch, 250 yards north of creek at Marmac Drive.	very little	yes	Ponding with heavy oil film.

APPENDIX I CONTINUED

<u>OUTFALL DESIGNATION</u>	<u>ONTARIO GRID SYSTEM DESIGNATION</u>	<u>DESCRIPTION OF OUTFALL</u>	<u>ESTIMATED FLOW (GPM)</u>	<u>SAMPLE OBTAINED</u>	<u>REMARKS</u>
MC-10	8DYYZMM25	48" CMP, left side of creek from McLachlan Drive.	50	yes	
MC-11	8DYYYMM78	24" concrete outfall, right side of creek from Constellation Court.	5	yes	Reddish effluent.
MC-12	7DDDDMM38	30" concrete outfall, 100 yards right of creek, (north of Dixon Road).	-	yes	
MC-13	7DDEFMM23	12" concrete outfall, left side of creek at Dixon Road Bridge.	no flow	no	
MC-14	7DDEFMM43	18" concrete outfall, left side of creek at Dixon Road.	no flow	no	
MC-15	7DDEFMM62	27" concrete outfall, left side of creek near Howard Johnson's Motor Hotel.	3-5	yes	Effluent yellowish green colour.
MC-16	7DDEMMM69	72" concrete outfall, left side of creek, from Kelfield Road.	20	yes	
MC-17	7DDEMMM81	CMP outfall to ditch, left side of creek.	no flow	no	
MC-18	7DDEWMM24	66" concrete outfall, right side of creek from Galaxy Boulevard.	25	yes	
MC-19	7DDEYMM64	6' x 4' concrete outfall, right side of creek near Carling Brewery Ltd.	5-7	yes	Scum on surface of effluent and strong malty odour.
MC-20	7DDETMM37	36" concrete outfall, left side of creek under Highway 27.	no flow	no	
MC-21	7DDEUMM42	12" CMP road drain, right side of creek at Highway 27.	no flow	no	

APPENDIX I CONTINUED

<u>OUTFALL DESIGNATION</u>	<u>ONTARIO GRID SYSTEM DESIGNATION</u>	<u>DESCRIPTION OF OUTFALL</u>	<u>ESTIMATED FLOW(GPM)</u>	<u>SAMPLE OBTAINED</u>	<u>REMARKS</u>
MC-22	7DDEUMM53	66" concrete outfall, left side of creek at Highway 401.	3	yes	Bacteriological sample only.
MC-23	7DDEZMM53	24" concrete outfall, left side of creek at Highway 401.	L1	yes	Pipe half filled with silt.
MC-24	7DDEZMM36	36" concrete outfall, right side of creek below Highway 401.	L1	yes	Pipe almost full of debris.
MC-25	7DEFAMM23	66" concrete outfall, left side of creek from Willowridge Road.	2-5	yes	
MC-26	7DEFAMM62	18" CMP road drain, right side of creek.	no flow	no	
MC-27	7DEFBMM25	18" CMP road drain, left side of creek.	no flow	no	
MC-28	7DEFBMM85	18" concrete road drain, left side of creek.	no flow	no	
MC-29	7DEFGMM32	18" CMP road drain, right side of creek, south of Eglinton Avenue.	no flow	no	
MC-30	7DEFHMM21	66" concrete outfall, left side of creek.	3-5	yes	
MC-31	7DEFGMM40	84" concrete fall, right side of creek, from Eglinton Avenue.	5	no	
MC-32	7DEFHMM33	66" concrete outfall, left side of creek.	5	no	
MC-33	7DEFHMM63	24" CMP road drain, left side of creek from Decarie Circle.	L1	yes	Bacteriological sample only.
MC-34	7DEFTMM15	48" concrete outfall, left side of creek from Dalegrove Crescent.	no flow	no	Oil film at outlet.

Note: L = less than.

APPENDIX I CONTINUED

<u>OUTFALL DESIGNATION</u>	<u>ONTARIO GRID SYSTEM DESIGNATION</u>	<u>DESCRIPTION OF OUTFALL</u>	<u>ESTIMATED FLOW(GPM)</u>	<u>SAMPLE OBTAINED</u>	<u>REMARKS</u>
MC-35	7DEFXMM72	60" concrete outfall into ditch on right side of creek.	20	yes	Sampling of ditch.
MC-36	7DELDMM37	27" concrete outfall, left side of creek from Puckerridge Crescent.	L1	yes	Bacteriological sample only. Oil film at outlet.
MC-37	7DELDMM44	24" concrete ourfall, right side of creek from Sedgebrook Crescent.	L1	yes	Bacteriological sample only.
MC-38	7DELEMM26	36" concrete outfall, right side of creek.	L1	yes	Traces of oil at outlet.
MC-39	7DEMAMM85	10' x 5.5' box concrete outfall to ditch at Martin Grove Road.	3-5	yes	
MC-40	7DEMGMM13	15" concrete outfall to ditch, leading to creek from Hillavon Drive.	L1	yes	Pipe half filled with debris.
MC-41	7DEMGMM40	24" concrete outfall, right side of creek from Martinview Court.	L1	no	
MC-42	7DEMHMM29	3' x 6' oval concrete outfall, left side of creek, north of Rathburn Road.	-	yes	
MC-43	7DEMNNMM37	18" outfall, left side of creek at Rathburn Road.	-	no	Outfall submerged.
MC-44	7DEMNNMM28	12" concrete outfall, right side of creek from Rathburn Road.	-	yes	
MC-45	7DEMNNMM76	24" concrete outfall, right side of creek from Donalbert Avenue.	-	yes	
MC-46	7DEMNNMM81	15" concrete outfall, left side of creek from Hampshire Heights.	no flow	no	

Note: L = less than.

APPENDIX I CONTINUED

<u>OUTFALL DESIGNATION</u>	<u>ONTARIO GRID SYSTEM DESIGNATION</u>	<u>DESCRIPTION OF OUTFALL</u>	<u>ESTIMATED FLOW (GPM)</u>	<u>SAMPLE OBTAINED</u>	<u>REMARKS</u>
MC-47	7DEMUMM75	18" concrete outfall, left side of creek from Rivercove Drive.	no flow	no	Outfall blocked.
MC-48	7DEMUMM82	27" concrete outfall, right side of creek from Lorraine Gardens.	no flow	no	Evidence of oil spillage.
MC-49	7DENVMM24	42" concrete outfall, right side of creek from Echo Valley Drive.	-	yes	
MC-50	7DENRMM43	24" concrete outfall, left side of creek at Kipling Avenue.	no flow	no	
MC-51	7DENRMM51	30" concrete outfall, left side of creek at Kipling Avenue.	no flow	no	
MC-52	7DENRMM85	30" concrete outfall, left side of creek from Burrows Avenue.	-	yes	
MC-53	7DENNMM39	60" concrete outfall, left side of creek from north of Bywood Drive.	-	yes	
MC-54	7DENZMM48	30" CMP outfall, right side of creek from Burnhamthorpe Road.	2	yes	
MC-55	7DENZMM78	5'-9" x 6" horse-shoe outfall, right side of creek from Burnhamthorpe Crescent.	5	yes	Gaseous odour. July 14 - investigation of report of oil entering stream. Discharge very murky containing some oil, evidence of oil on banks. Odour of oil.

APPENDIX I CONTINUED

<u>OUTFALL DESIGNATION</u>	<u>ONTARIO GRID SYSTEM DESIGNATION</u>	<u>DESCRIPTION OF OUTFALL</u>	<u>ESTIMATED FLOW (GPM)</u>	<u>SAMPLE OBTAINED</u>	<u>REMARKS</u>
MC-56	7DEOVMM47	33" concrete outfall, left side of creek from Riverbank Drive.	-	yes	
MC-57	7DEOVMM73	30" concrete outfall, left side of creek from Hatton Court.	no flow	no	
MC-58	7DEOVMM85	6" clay pipe	1	yes	
MC-59	7DEOWMM16	21" concrete outfall, right side of creek below water level at Dundas Street bridge.	-	no	
MC-60	7DEOWMM37	33" concrete outfall, left side of creek at Islington Avenue bridge.	-	yes	
MC-61	7DETBMM20	54" concrete outfall, right side of creek from open ditch.	-	yes	
MC-62	7DETCMM25	24" asbestos outfall, left side of creek from school on Montgomery Road.	-	yes	
MC-63	7DETCMM40	8" concrete outfall, right side of creek at CPR track.	no flow	no	
MC-64	7DETCMM60	12" concrete outfall, right side of creek.	no flow	no	
MC-65	7DETCMM75	12" CMP outfall, left side of creek from swimming pool parking lot.	no flow	no	
MC-66	7DETDMM27	33" concrete outfall, left side of creek from Westrose Avenue.	-	yes	
MC-67	7DETDMM60	12" concrete outfall, right side of creek.	no flow	no	
MC-68	7DETDMM72	8" concrete outfall, right side of creek at back of school yard.	no flow	no	

APPENDIX I CONTINUED

<u>OUTFALL DESIGNATION</u>	<u>ONTARIO GRID SYSTEM DESIGNATION</u>	<u>DESCRIPTION OF OUTFALL</u>	<u>ESTIMATED FLOW(GPM)</u>	<u>SAMPLE OBTAINED</u>	<u>REMARKS</u>
MC-69	7DETKMM26	36" CMP, right side of creek, Bloor Street bridge.	-	yes	
MC-70	7DETKMM37	36" CMP, left side of creek, Bloor Street bridge.	-	yes	Continuous oil film.
MC-71	7DETKMM82	21" concrete outfall, right side of creek from Meadowvale Drive.	-	yes	
MC-72	7DETKMM84	24" concrete outfall, left side of creek from Meadowvale Drive.	-	yes	
MC-73	7DETPMM22	15" concrete outfall, right side of creek Van Dusen Boulevard.	no flow	no	
MC-74	7DETPMM46	27" concrete outfall, right side of creek from Van Dusen Boulevard.	-	yes	
MC-75	7DETPMM72	5'x5' concrete box, right side of creek from Springbrook Gardens.	-	yes	
MC-76	7DETPMM69	24" concrete outfall, left side of creek from Orchard Crescent.	no flow	no	
MC-77	7DEURMM24	33" concrete outfall, right side of creek from Leland Avenue.	-	yes	
MC-78	7DEUMMM79	30" CMP, left side of creek at Royal York Road.	-	yes	
MC-79	7DEUSMM63	21" concrete outfall, left side of creek from Humbervale Boulevard.	-	yes	
MC-80	7DEUSMM72	12" CIP, right side of creek.	-	yes	
MC-81	7DEUSMM81	18" concrete outfall, left side of creek from Reid Manor.	-	yes	

APPENDIX I CONTINUED

<u>OUTFALL DESIGNATION</u>	<u>ONTARIO GRID SYSTEM DESIGNATION</u>	<u>DESCRIPTION OF OUTFALL</u>	<u>ESTIMATED FLOW (GPM)</u>	<u>SAMPLE OBTAINED</u>	<u>REMARKS</u>
MC-82	7DEUYMM36	53"x83" oval concrete outfall, right side of creek from Norseman Street.	-	yes	
MC-83	7DEUXMM64	54" CMP at Royal York Road to ditch leading to Mimico Creek.	-	yes	
MC-84	7DEZDMM40	12" concrete outfall, right side of creek, north of Berry Road at footbridge.	no flow	no	
MC-85	7DEZEMM24	36" concrete outfall, right side at Berry Road.	-	yes	
MC-86	7DEZEMM81	24" concrete outfall, left side of creek from Caledon Road and Prince Edward Drive.	-	yes	
MC-87	7EAVAMM61	8" CMP, right side of creek from Beaucourt Road.	no flow	no	
MC-88	7EAVFMM36	15" CIP, right side of creek through easement north of Delroy Drive.	-	yes	
MC-89	7EAVFMM66	15" CMP, right side of creek from Delroy Drive.	-	yes	
MC-90	7EAVFMM76	18" CMP, right side of creek.	no flow	no	
MC-91	7EAVFMM84	8" CIP, right side of creek.	no flow	no	
MC-92	7EAVGMM27	24" outfall, left side of creek from Bonnyview Drive.	-	yes	
MC-93	7EAVHMM35	24" outfall, left side of creek from Bonnyview Drive.	no flow	no	

APPENDIX I CONTINUED

<u>OUTFALL DESIGNATION</u>	<u>ONTARIO GRID SYSTEM DESIGNATION</u>	<u>DESCRIPTION OF OUTFALL</u>	<u>ESTIMATED FLOW(GPM)</u>	<u>SAMPLE OBTAINED</u>	<u>REMARKS</u>
MC-94	7DAVGMM70	12" concrete outfall, right side of creek near Woodford Park Road.	-	yes	
MC-95	7EAVNMM35	15" concrete outfall, left side of creek at Queensway.	no flow	no	
MC-96	7EAVNMM28	24" CMP outfall, right side of creek at Queensway.	no flow	no	
MC-97	7EAVTMM24	24" CMP outfall, right side of creek from Ridgeway Road.	no flow	no	
MC-98	7EAVTMM51	42" outfall, left side of creek north of QEW near Food Terminal.	-	yes	
MC-99	7DAVUMM40	12' x 7' box culvert, right side of creek from Oxford Street.	-	yes	
MC-100	7DAVUMM42	24" concrete outfall located in abutment of previous outfall.	no flow	no	
MC-101	7EAVUMM88	18" CMP outfall, right side of creek at rear of McGuinnes Distillers Limited.	-	yes	
MC-102	7EAVZMM19	10" clay tile, left side of creek at rear of Noxema Limited.	no flow	no	
MC-103	7EAVZMM29	8" clay tile, left side of creek at the rear of Noxema Limited.	-	yes	
MC-104	7EAWVMM64	Stream entering on right side of creek near Mimico Creek sludge plant.	-	yes	

APPENDIX I CONTINUED

<u>OUTFALL DESIGNATION</u>	<u>ONTARIO GRID SYSTEM DESIGNATION</u>	<u>DESCRIPTION OF OUTFALL</u>	<u>ESTIMATED FLOW (GPM)</u>	<u>SAMPLE OBTAINED</u>	<u>REMARKS</u>
MC-105	7EAWVMM79	18" concrete outfall, left side of creek at rear of Wilson Lighting Limited.	-	yes	
MC-106	7EAWVMM88	15" concrete outfall, right side of creek at Lakeshore Road Bridge.	-	no	
MC-107	7EAWVMM91	36" concrete outfall, left side of creek at Lakeshore Road Bridge.	-	yes	August 18, a white scum was seen discharging. Samples were taken for identification (these are included in Table I).

APPENDIX II

STREAM SURVEY - SAMPLING LOCATIONS ON MIMICO CREEK

<u>DESIGNATION</u>	<u>DESCRIPTION</u>
MC-A	Mimico Creek at Indian Line.
MC-B	Mimico Creek at Carlingview Drive.
MC-C	Mimico Creek at Dixon Road.
MC-D	Mimico Creek at Highway 27.
MC-E	Mimico Creek at Eglinton Avenue West.
MC-F	Mimico Creek at Martin Grove Road.
MC-G	Mimico Creek at Rathburn Road.
MC-H	Mimico Creek at Echo Valley Road.
MC-I	Mimico Creek at Bloor Street West.
MC-J	Mimico Creek at Royal York Road.
MC-K	Mimico Creek at Queensway Boulevard.
MC-L	Mimico Creek at Lakeshore Road (Mouth of stream).

APPENDIX III

METEROLOGICAL DATA

<u>DATE</u> <u>(1972)</u>	<u>TEMPERATURE F°</u>		<u>PRECIPITATION</u> <u>(inches)</u>
	<u>HIGH</u>	<u>LOW</u>	
June 26	71	52	0.06
June 27	77	50	0.47
June 28	78	55	nil
June 29	71	62	0.53
June 30	72	58	0.42
July 14	84	64	0.52
August 18	79	57	nil

NOTE: Data obtained from the Meterological Branch, Department of Transport, Canada, as measured at the Toronto International Airport.

APPENDIX IV

SEWAGE ANALYSES - MALTON WATER POLLUTION CONTROL PLANT

1971 - AVERAGE OF ANALYSES

<u>ANALYSES</u>	<u>RAW SEWAGE</u>	<u>FINAL EFFLUENT</u>
5-Day BOD (mg/l)	195	17
Suspended Solids (mg/l)	233	11
Total Phosphorus as P (mg/l)	9.9	8.9

1971 FLOWS (MIG/DAY)

Average Day .65
Maximum Day 1.38
Maximum Rate 2.2

TOTAL FOR THE YEAR 236.58 MG

1972 - AVERAGE OF ANALYSES

<u>ANALYSES</u>	<u>RAW SEWAGE</u>	<u>FINAL EFFLUENT</u>
5-Day BOD (mg/l)	122	13.4
Suspended Solids (mg/l)	146	12.3
Total Phosphorus as P (mg/l)	6.4	4.7

1972 FLOWS (MIG/DAY)

Average Day .66
Maximum Day 1.98
Maximum Rate 3.3

TOTAL FOR THE YEAR 239.40 MG

AUGUST 17, 1972 - RESULTS OF COMPOSITE SAMPLING

	<u>5-Day BOD</u> <u>(mg/l)</u>	<u>SUSPENDED</u> <u>SOLIDS</u> <u>(mg/l)</u>	<u>TOTAL KJELDAHL</u> <u>AS N (mg/l)</u>	<u>TOTAL PHOSPHORUS</u> <u>as P (mg/l)</u>
1. Raw Sewage	320	365	48	13
2. Clarifier Effluent (old section)	44	15	19	-
3. Clarifier Effluent (new section)	60	35	21	-
4. Chlorinated Effluent	32	30	19	3.4

APPENDIX V

GLOSSARY

BIOCHEMICAL OXYGEN DEMAND (BOD₅) - The quantity of oxygen required during the stabilization of decomposable organic matter and oxidizable inorganic matter by aerobic biological action, measured over a 5-day period at 20°C in the absence of light. BOD₅ is employed to indicate relative organic content of raw and treated sewage, surface waters, etc.

CIP - Cast iron pipe.

CMP - Corrugated metal pipe.

COMBINED SEWERS - A sewer that was intended to carry both sanitary and storm flows. A combined sewer system, therefore, has only one local collector on each street, and this collector receives both storm and sanitary wastes.

CONTAMINATE - Introduce or release into a receiving water potentially pathogenic organisms or toxic substances that render the water hazardous for human consumption or domestic use.

COLIFORM BACTERIA - A class of bacteria which are natural inhabitants of the intestines of man and animals and which are present in human sewage in extremely high numbers. In addition some species of coliform bacteria are found in soil and decaying vegetation.

DRAINAGE AREA - The area from which surface waters drain to a particular watercourse.

FAECAL COLIFORMS - Coliform bacteria of faecal origin whose presence in significant quantity suggest recent contact with human or animal wastes.

gpm - Gallons per minute.

MIG - Million Imperial Gallons.

OUTFALL - The outlet or mouth of any river, dam, sewer, etc., where it discharges to a lake, river, stream, etc.

PHENOLIC COMPOUNDS (PHENOLS) - Hydroxy derivatives of benzene and its condensed nuclei. They are usually present in surface waters as a result of contact with petroleum products.

SANITARY SEWER - A sewer intended to carry domestic and industrial wastes only.

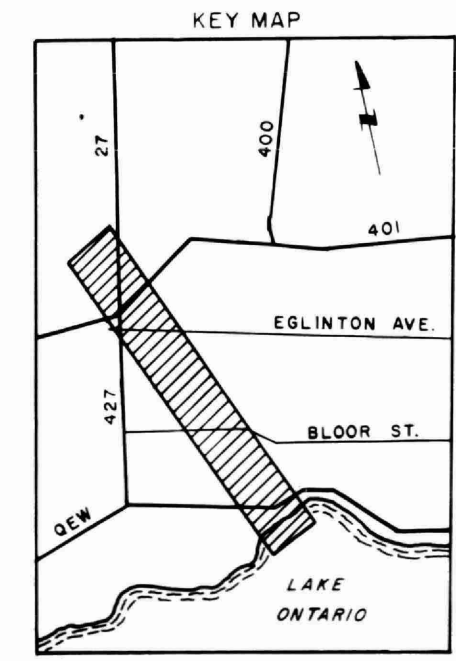
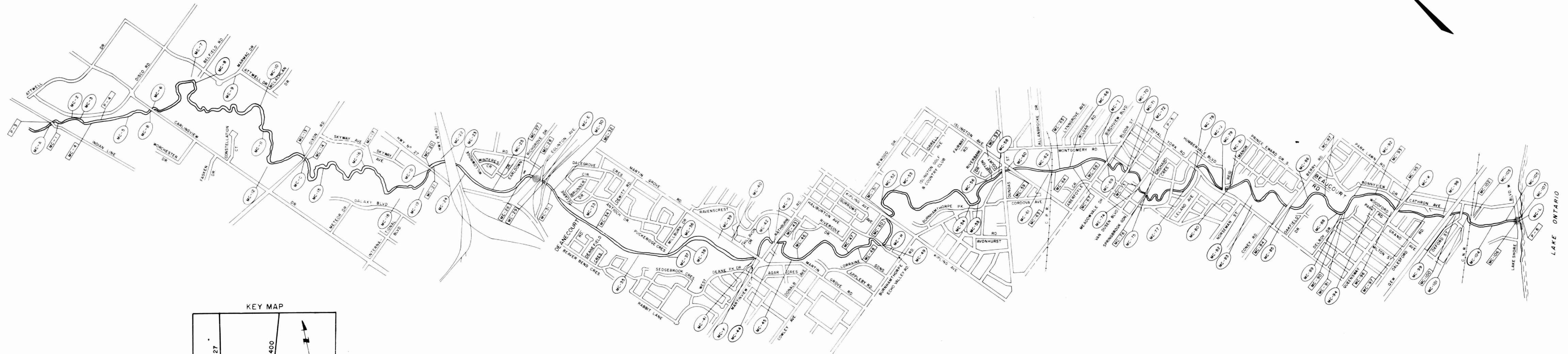
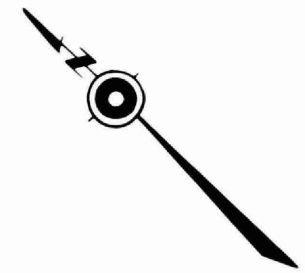
SEPARATE SEWER SYSTEM - A sewer system comprising two non-interconnected sets of sewers, one to carry domestic and industrial wastes (sanitary sewer) and one to carry storm water (storm sewer).

STORM SEWER - A sewer intended to carry only storm water and relatively unpolluted discharges (eg. cooling waters).

SUSPENDED SOLIDS - In natural waters, suspended solids consist normally of erosion silt, organic detritus and plankton. The impact of man's activities, however, alter and augment the suspended solids in surface waters by the discharge of liquid wastes from communities and industries and increased erosion etc.

TOTAL KJELDAHL - Total Kjeldahl is a measurement of the total nitrogenous matter present except that measured as nitrite and nitrate nitrogens. The total Kjeldahl less the ammonia nitrogen measures the organic nitrogen present. Ammonia and organic nitrogen determinations are important in determining the availability of nitrogen for biological utilization.

TOTAL PHOSPHORUS - Total phosphorus is a measure of both the organic and inorganic forms of phosphorus present.



LEGEND

- MC-16 SAMPLING POINT
OUTFALL SURVEY (SAMPLED)
- MC-32 SAMPLING POINT
OUTFALL SURVEY (NOT SAMPLED)
- MC-A SAMPLING POINT
STREAM SURVEY (SAMPLED)
- P-3 LOCATION OF
PHOTOGRAPH

ENVIRONMENT ONTARIO	
MIMICO CREEK OUTFALL SURVEY 1972	
SCALE: 1" = 2000' APPROX.	
DRAWN BY: R.S.	DATE: JANUARY 1973
CHECKED BY:	DRAWING NO: 73-9-D.E.

Date Due

ONTARIO
Ministry of Environment
OUTFALL SURVEY
MIMICO CREEK
MUNICIPALITY OF
METROPOLITAN TORONTO, 1973

TERMINAL STREAM: MIMICO CR.

DATE	ISSUED TO
26 Oct 78	<i>N. Chin</i>

W.Q. LIB